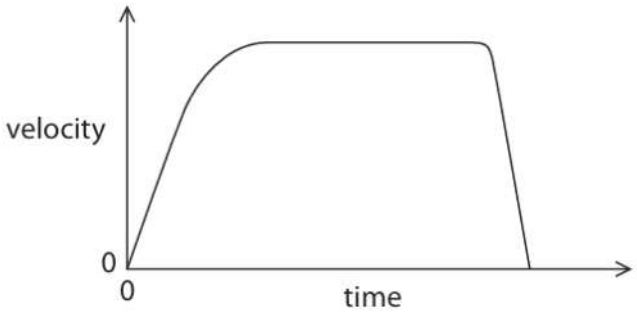
Edexcel Physics Test: Total Marks: 35 Obtained Marks: 22.

22 November 2025 09:22

1 A toy car rolls down a ramp and hits a cushion.

The graph shows how its velocity changes with time.



(a) Constant velocity on the graph is shown by

(1)

- ☐ **A** the area under the line
- ☐ **B** the horizontal part of the line ✓
- ☐ **C** the sloping line at the end
- ☒ **D** the sloping line at the start X

(b) The distance travelled is shown by

(1)

- ☒ **A** the area under the line ✓
- ☐ **B** the horizontal part of the line
- ☐ **C** the sloping line at the end
- ☐ **D** the sloping line at the start

(c) The average velocity of the toy car is given by

(1)

- ☐ **A** the change in velocity divided by the time taken
- ☒ **B** the distance moved divided by the time taken ✓
- ☐ **C** the time taken divided by the change in velocity
- ☐ **D** the time taken divided by the distance moved

2

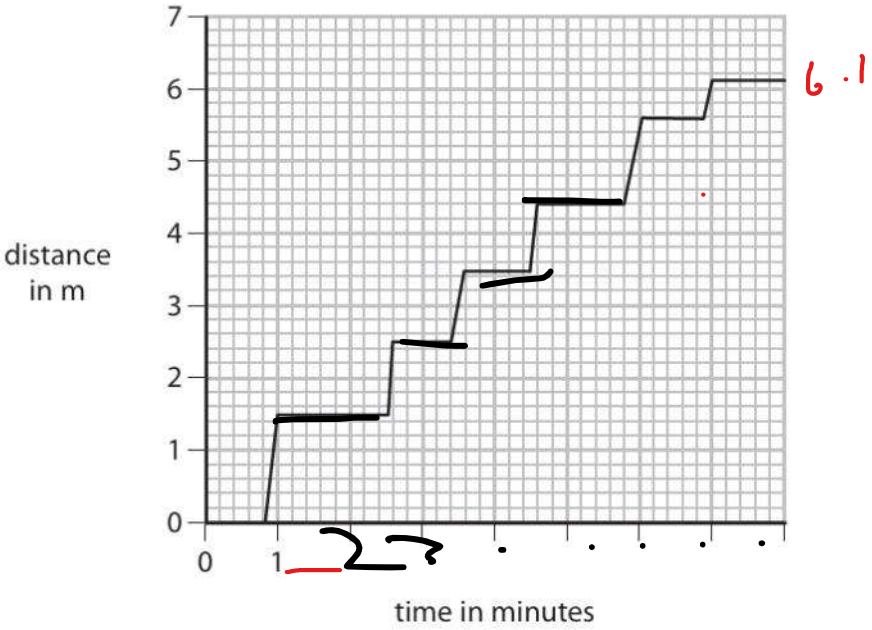
(Total for Question 1 = 3 marks)

The diagram shows some people waiting in a queue at a supermarket.

The queue moves forward each time a person leaves the checkout.

Person X spends seven minutes in the queue before reaching the checkout.

The graph shows how distance changes with time for person X.



(a) (i) What is the initial length of the queue?

(1)

6.1

initial length = 6.3 m

(ii) Explain how you could use the graph to work out the number of times person X is stationary.

(2)

When the herf is a time when time is passed but person X's distance from the counter, he is stationary.

on the graph flat or horizontal line mean person was stationary and slope will be zero for that.

(b) (i) State the equation linking average speed, distance moved and time taken.

1

(1)

$S = \frac{D}{T}$ ✓

(ii) Calculate the average speed of person X in the queue.

Give the unit.

1.5

(3)

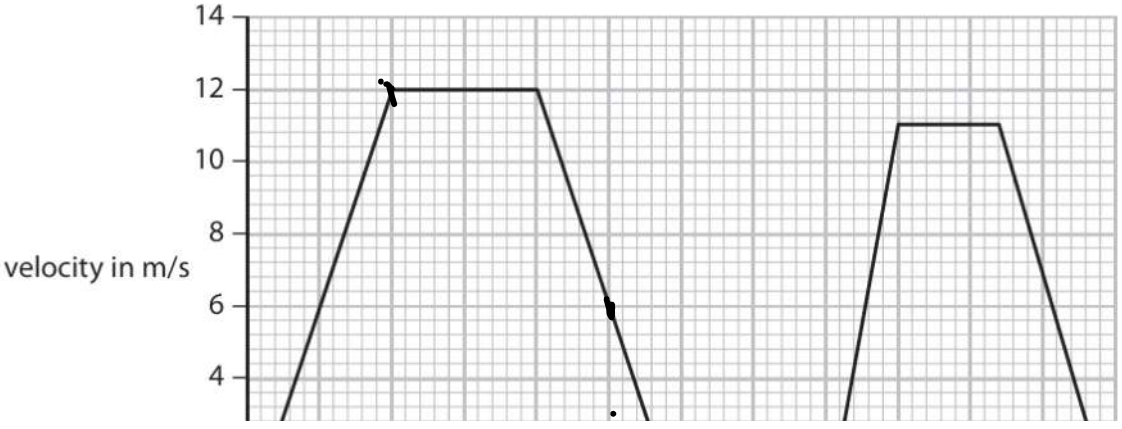
$\frac{6.1}{1 \times 60}$

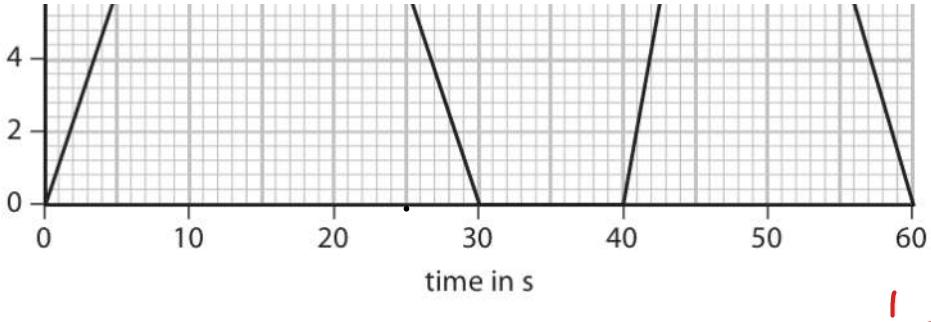
average speed = 0.015 unit m/s

(Total for Question 6 = 7 marks)

A bus travels along a straight road.

The graph shows how the velocity of the bus changes during a short journey.





(a) (i) State the velocity of the bus after 25 s.

1

(1)

velocity = 6 m/s

(ii) How long is the bus stationary during its journey?

0

(1)

in first 25 seconds

10

time = 30 s

(b) (i) State the equation linking acceleration, change in velocity and time taken.

1

(1)

$a = \frac{\Delta v}{t}$

(ii) Calculate the acceleration of the bus during the first 10 seconds.

Give the unit.

2

(3)

$a = \frac{12}{10} = 1.2 m/s^2$

D

acceleration = 1.2 unit m/s^2

(c) (i) State the equation linking average speed, distance moved and time taken.

(1)

$S = \frac{d}{t}$

(ii) The bus moves a total distance of 390 m during the journey.

Calculate the average speed of the bus.

(2)

average speed = 6.5 m/s

(d) The bus travels further in the first 30 seconds of its journey than it does during the last 30 seconds.

Explain how the graph shows this.

(2)

the area under the curve in the first half is where velocity is higher, showing that it covers more for the journey there

(Total for Question 4 = 11 marks)

A student investigates the speed of different toy cars as they roll down a slope.

(a) The student makes this prediction.

'The more weight a toy car has the faster it will roll down the slope.'

(i) What is the independent variable in the student's prediction?

(1)

weight of car

(ii) What is the dependent variable in the student's prediction?

(1)

time taken to roll down hill

(b) State two factors that the student should keep constant in his investigation.

(2)

1) steepness of slope & starting height

2) ?

(c) Put ticks (✓) in the boxes to show which pieces of apparatus the student needs for his investigation.

One has been done for you.

(2)

battery	
joulemeter	
micrometer	
newtonmeter	✓
ruler	✓
stopwatch	✓

thermometer	

(d) Describe what the student should do to test his prediction that the more weight the toy car has, the faster it will roll down the slope.

3

(5)

He should

car) he should have 3 different cars, one heavier, one normal weight and one lighter. He should then each car 3 times and find the average, then compare.

(Total for Question 6 = 11 marks)

The sledge starts from rest and accelerates at 1.5 m/s^2 until its velocity is 2.8 m/s.

(i) State the relationship between acceleration, velocity and time.

1

(1)

$$a = \frac{v_f - v_i}{t}$$

(ii) Show that the time taken to reach 2.8 m/s is about 2 s.

2

(2)

$$1.5 = \frac{2.8}{t}$$

$$t = 2.8 \div 1.5$$

$$t \approx 2$$